2001

Crop Watch No. 2001-02, March 16, 2001

Lisa Brown Jasa
University of Nebraska-Lincoln, ljasa@unlnotes.unl.edu

CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 2001-2
March 16, 2001

Early signs show wheat looking good

While it's still still too early to know how well the wheat survived the winter, early indications are that except for its small size and low tiller number, wheat in western Nebraska is off to a good start.

West central

Dry conditions early last September resulted in delayed wheat emergence and planting; however, rainfall in late September and October contributed to good wheat stands across much of the state. With the early winter many plants entered dormancy in good shape but with little growth. In west central and western Nebraska where wheat was planted in late October, for example, after a row crop such as dry bean or corn, wheat stands are spotty and some of this late-planted wheat never emerged. These stands should be monitored and evaluated in early April to determine whether they should be left or destroyed. (See page 16 for how to estimate winter wheat yields.) Some of the wheat that did not emerge last fall may still emerge this spring.

Panhandle

In western Nebraska, windy conditions in early winter resulted in some wheat being buried or blown out, particularly on hillsides. Much of the wheat, however, appears to have made it through the winter in good shape and is beginning to green-up and grow with the warm weather. Surface soil moisture conditions are very good, however, there is some concern about a lack of subsoil moisture in fields that were not planted into summer fallowed ground.

South central and southeast

Most of the wheat in south central and southeast Nebraska is still brown from the winter dormancy. Good moisture and snow cover make us optimistic that wheat conditions are better than they have been the past three years. In a few places where bare hill slopes have encouraged early green-up, the stands look good and winter kill appears minimal. With the late winter snow melt, some fields have areas with standing water and ice. Wheat in these areas may be injured or killed. Under cool conditions wheat can tolerate flooding better than in warm weather; however, there is a lack of information on just how tolerant it is.

Drew Lyon, Extension Dryland Cropping Systems Specialist, Panhandle
Robert Klein, Extension Cropping Systems Specialist, West Central
Lennis Nelson
Extension Crop Variety Specialist
Steve Melvin
Extension Educator

Focus on *Wheat Production*

New herbicides enter market

Following is a summary of some of the herbicides, formulations, and tank mixes that are newly available or will soon be on the market.

Aim (carfentrazone). The label has been expanded to include preplant burndown or postemergence broadleaf weed control in corn, soybean, sorghum and small grain. **FMC**

Balance Pro (isoxaflutole) is a 4 lb/gal formulation of Balance registered as a soil-applied herbicide for corn. The new formulation has improved mixing characteristics compared to the 75 WDG formulation. **Aventis**

Callisto (mesotrione/ZA-1296), a pigment synthesis inhibitor, is being developed for pre and post broadleaf weed control in corn. This product is not labeled at this time; however, a label is anticipated for the 2001 season. Callisto was developed by Syngenta and will be co-marketed by **Syngenta** and **Dow.**

(Continued on page 13)

NU survey: Ag land values remain steady

Through low crop prices, drought and rising input costs, Nebraska's agricultural real estate market remains relatively stable, according to the University of Nebraska's 2001 Nebraska Farm Real Estate Market Survey.

As of Feb. 1, the preliminary statewide all-land average value was $709 per acre, a 1.6% increase over last year's average of $696.

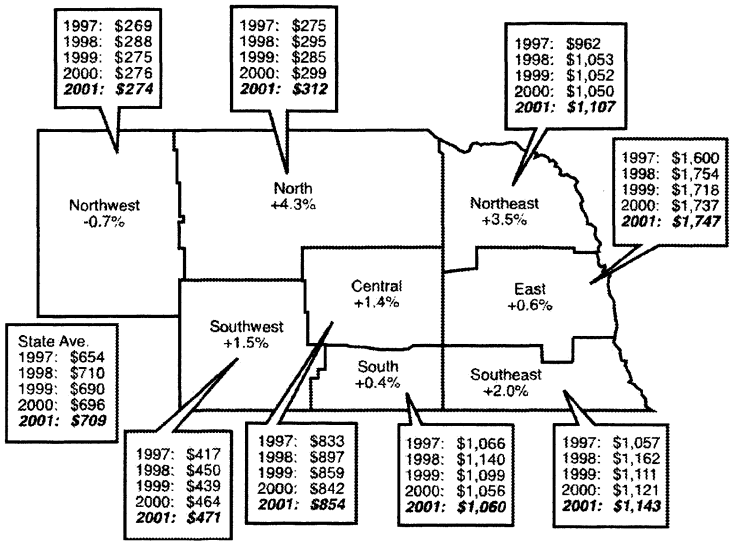
"Payments from federal farm programs have helped to maintain land asset values in the face of these negative economic forces," said Bruce Johnson, the NU agricultural economist who conducted the survey. "In 2000, an estimated $1.4 billion of government payments came to Nebraska producers and land owners, adding up to three-fourths of the state's total net farm income for the year."

Grazing and forage land classes saw some increase in value, between 5% and 6%, while land values in the state's cropland classes showed little change. From a geographic perspective, in the northwest part of the state slight increases in grazing land values were tempered by value decreases in other land classes for a slight drop from last year's all-land average. The north area, driven by a healthy increase in the value of the nontillable grazing lands that dominate the region, saw the biggest increase in land values overall, at 4.3%. However, northeast Nebraska saw the most consistent gains, with increases in all land classes fueling an overall 3.5% increase. Financial stresses do not appear to have increased the supply of agricultural land on the market, Johnson said.

"Competition for land on the demand side has not diminished, even though the number of prospective buyers in many local markets does seem to be down," Johnson said. More on this story on the Web at: *http://ianrhome.unl.edu/static/0103092.shtml*

Heather Corley
IANR News Writer

Average agricultural land values. *This information is based on the University of Nebraska's annual Farm Real Estate Market Development Surveys. Percentages are increases or decreases from a year ago as of Feb. 1, 2001.*



Wheat resources

Interested in further information on wheat production and management recommendations for Nebraska? Visit the NU Cooperative Extension web site at *http://www.panhandle.unl.edu/personnel/lyon/wheathbk.htm*

This site contains links to current Extension publications related to wheat as well as providing other information.

CROP WATCH

cropwatch.unl.edu

Crop Watch is published from March to November by the University of Nebraska Institute of Agriculture and Natural Resources Communications and Information Technology, PO Box 830918, 108 Agricultural Communications Bldg., UNL, Lincoln, NE 68583-0918. To order either a printed or electronic (web) subscription or to change your address, write to ***Crop Watch*** at the above address or call (402) 472-7981. The newsletter also is available on the web at **cropwatch.unl.edu**

Lisa Jasa, Editor

For more information about a particular subject, write the authors at the addresses below:

UNL Department of Entomology
202 Plant Industry Bldg.
Lincoln, NE 68583-0816

UNL Department of Plant Pathology
406 Plant Science Bldg.
Lincoln, NE 68583-0722

UNL Department of Agronomy
279 Plant Science Bldg.
Lincoln, NE 68583-0918

UNL Department of Agricultural Meteorology
236 L.W. Chase Hall
Lincoln, NE 68583-0728

Herbicides *(Continued from page 11)*

Command Xtra (clomazome + carfentrazone) consists of the same active ingredients found in Command and Authority. The product is a co-pack of two containers, each containing one of the ingredients. Command Xtra is registered as a soil-applied treatment for weed control in soybean. Command Xtra provides control of a broader weed spectrum than Command, including pigweed and waterhemp. **FMC**

Connect 20 WSP (bromoxynil). A dry formulation of bromoxyril (the active ingredient in Buctril) registered for postemergence broadleaf weed control in corn, sorghum, alfalfa and small grain. The Connect formulation causes less crop leaf burn than the EC formulation. Add COC as a spray additive. **Aventis**

Define (flufenacet), a seedling growth inhibitor with preemergence activity on annual grasses, will be marketed in corn by Aventis under a marketing agreement with Bayer. Bayer currently markets flufenacet in combination with metribuzin under the tradename Axiom. Define will be registered for use in combination with Balance pro and perhaps other broadleaf herbicides. **Aventis**

DPX-79406 (nicosulfuron + rimsulfuron) is registered for postemergence grass control in corn. These two herbicides along with atrazine are found in Basis Gold. DPX-79406, at the use rate, contains the same amount of nicosulfuron (Accent) and rimsulfuron as Basis Gold but no atrazine. DPX-79406 will be marketed for use in corn grown in rotation with sugarbeet. **DuPont**

Expert is a combination of Dual Magnum + atrazine + glyphosate registered for use preplant in corn from **Syngenta**. This product is incorrectly identified in the *2001 Guide for Weed Management in Nebraska* dictionary.

Gauntlet (cloransulam + carfentrazone) consists of the same active ingredients found in FirstRate and Authority. The product is a co-pack of two containers, each containing one of the ingredients. Gauntlet is registered as a soil-applied treatment for weed control in soybean. Gauntlet provides control of many broadleaf weeds including ALS resistant waterhemp. **Dow.**

Glyphosate will be available under several trade names, in at least two concentrations and with or without surfactant. Monsanto will market Roundup Ultra Max, a 5 lb per gallon material. Roundup Ultra contained 4 lb per gallon active ingredient. **Monsanto**

Gramoxone Max (paraquat) is a new formulation containing 3 lb/gallon paraquat. Gramoxone Max will replace Gramoxone Extra which contained 2.5 lb paraquat per gallon. **Syngenta**

Harmony GT (thifensulfuron), a 75% DF active ingredient formulation, will be marketed for postemergence broadleaf weed control in wheat and soybean. This product replaces the 25% DF Pinnacle product in the DuPont herbicide lineup. Rotational restrictions are minimal as thifensulfuron has very little soil residual activity. **DuPont**

Hornet (flumetsulam + clopyralid) is now a 78.5 WDG. Previously Hornet was an 85.6 WDS. **Dow**

Maverick (sulfosulfuron) is registered for postemergence control of downy brome, other winter annual grasses and broadleaf weeds in wheat. Early post applications made in fall are most effective on downy brome. **Monsanto**

Outlook (dimethenamid active isomer) is the same active ingredient as Frontier but contains only the active isomer of dimethenamid. As a result the use rates are lower than Frontier. Uses of Outlook are the same as Frontier. **BASF**

With multiple formulations of both Roundup and Touchdown on the market, use rate equivalents may be confusing. The following table lists equivalent use rates of common Roundup and Touchdown formulations.

Use rate equivalents

Roundup		*Touchdown*	
Ultra	Ultra Max	Touchdown 5	Touchdown (IQ)
1.0 qt	0.8 qt	0.8 qt	1.0 qt

Steadfast (nicosulfuron + rimsulfuron) is registered for postemergence grass control in corn. These two herbicides along with atrazine are found in Basis Gold. Steadfast, at the use rate, contains twice as much nicosulfuron (Accent) and the same amount of rimsulfuron as Basis Gold, but no atrazine. **DuPont**

Sterling (dicamba) contains the same active ingredient as Banvel/Clarity and is registered for postemergence broadleaf weed control in corn, sorghum, small grain and pasture. **Agriliance**

Sterling Plus (dicamba + atrazine) contains the same active ingredients as Marksman and is registered for early postemergence broadleaf weed control in corn and sorghum. **Agriliance**

Ultra Blazer (aciflurofen) is a new formulation of Blazer designed to reduce crop response typically observed with Blazer. **BASF**

Touchdown (IQ) (glyphosate) containing 4 lb/gallon active ingredient will be marketed for use in Roundup Ready crops, as a burndown treatment and for many other glyphosate uses. The new formulation is a diammonium salt of glyphosate. Touchdown 5 is a trimethylsulfonuim (trimesium) salt of glyphosate also called sulfosate. Roundup is an isopropylamine salt of glyphosate. Touchdown (IQ) does not cause the crop response on soybean often observed with Tounchdown 5. Touchdown 4 can be used on Roundup Ready corn while Touchdown 5 was not registered for this use. **Syngenta**

Brady Kappler
Extension Educator, Weed Science

In winter wheat

Check for signs of disease after green-up

The 2000-2001 winter has been more typical of a normal Nebraska winter and probably has been better for our winter wheat crop than those of the past few years. Relatively colder temperatures throughout winter kept wheat from breaking dormancy. A couple brief surveys in eastern Nebraska in early March did not reveal any major winter-kill or crown and root rot problems, although it is still too early to accurately assess possible disease situations that may have developed over winter.

Wheat disease surveys in southeast and south central Nebraska during April will provide a true picture of any potential problems. During those surveys the incidence of crown and root rot and soil-borne mosaic will be assessed. Based on winter conditions, I don't anticipate major problems with either disease, although crown and root rot could be a factor in some fields in western Nebraska because of dry conditions last fall.

Symptoms of crown and root rot vary from dark brown lesions on roots and subcoronal internodes (the tissue between the seed and the crown) to a rotting and brown discoloration of crowns. Plants with light to moderate crown rot generally survive but often tiller poorly and have small leaves and heads on the main stem. With severe crown rot, plants decline rapidly shortly after spring "green-up". Yield loss results from a reduction in the number and size of heads and/or a loss of stands.

Individual fields affected by root and crown rot contain scattered pockets of dead and dying plants. Affected areas often follow terrace ridges or occur on exposed slopes. Other fields show damage uniformly over much of the crop. To diagnose the disease, remove suspected seedlings, wash free of soil, and examine for the presence of dark brown lesions and nonfunctional roots with few or no new roots initiating from the crown. Split the crowns at the base of stems with a sharp knife or a razor blade to detect rot.

Keep in mind that at this early date we do not have a true assessment of the crown and root rot situation in Nebraska, and will not have an accurate picture until the wheat breaks dormancy in April.

If climatologists have correctly forecast a wet, cool spring, soil-borne mosaic will probably be widespread across eastern and central Nebraska. In the field, soil-borne mosaic appears as irregular patches of yellow or light green wheat. In most fields that pattern may conform to low areas or drainage paths, but with other fields symptoms may be generally distributed across the field. Symptom development is enhanced by cool, moist conditions and will be more extensive if April and May are cool. Assessing the effect on yield is difficult. Leaf loss can range from 0% to 50%. The highest losses will be in continuous wheat fields, planted early to a susceptible variety. Wheat planted after soybeans is at less risk because the later planting reduces the window for fall infection.

Management of both crown and root rot and soil borne mosaic begins with fall practices. Planting date, variety selection and seedbed preparation are critical factors in preventing both diseases. There are no treatment options once symptoms develop in the spring.

John E. Watkins
Extension Plant Pathologist

Watch for early insect pests in wheat

Wheat insect problems in the spring are not common in Nebraska, however outbreaks can become serious if they aren't treated in the early stages. It is important to monitor regrowth to identify any developing insect problems.

Cutworms are usually the first insect of concern in winter wheat. Army cutworms feed on foliage in alfalfa and wheat fields in early spring. Army cutworm moths lay eggs in the fall, and larvae hatch and overwinter as partially grown larvae. In wheat, the cutworms feed on foliage and the threshold is four to five cutworms per row foot in healthy wheat. This threshold should be lowered if wheat is stressed and has limited foliage. It is important to properly identify this pest since some cutworms will likely be less damaging and others may be more damaging (e.g. pale western cutworm) than army cutworms. Pheromone trapping last fall in western Nebraska indicated that moth activity was lower than in previous years, but the potential for damage this spring needs to be evaluated.

Pale western cutworms occur less commonly, but are much more damaging than army cutworms. Pale western cutworms overwinter in the egg stage so they develop a little later in the spring than army cutworms. The larvae feed on tillers just above the crown of the plant. This feeding will result in tiller death and significant damage under heavy infestations. Cut tillers that have dried up and are lying on the soil surface are symptomatic of pale western cutworm infestations.

(Continued on page 15)

Insects

(Continued from page 14)

Thresholds for the pale western cutworm are one to two cutworms per row foot. Damage tends to be worse in areas where soil is dry and loose, such as hilltops or dry slopes. Pheromone trapping last fall indicated that increased moth activity occurred in the southern Panhandle (Cheyenne and Kimball counties). Growers in these areas should watch for signs of cutworm activity this spring.

More information on the army and pale western cutworms is available in the NebGuide, *Management of the Army and Pale Western Cutworm* (G1145). If treatment is needed, the pyrethroid, Warrior T, would likely give the best control of army cutworms in wheat. Lorsban 4E-SG also would give adequate control.

Russian wheat aphid activity was higher in western Nebraska last spring due to the mild winter; however, the hot, dry summer was less conducive to its survival and aphid infestations were difficult to find last fall. It is not likely that there will be a widespread presence of the Russian wheat aphid this spring, but if dry and warm conditions persist this spring, problems could develop.

Another problem that could develop if the spring remains dry in the west would be the brown wheat mite. This small brown mite tends to be prevalent during dry conditions early in the spring. It feeds on wheat causing wheat to take on a speckled yellow appearance, particularly at the tips of the leaves. It also gives the wheat a stressed appearance. Often it is difficult to determine if the wheat is suffering from stress or mite damage. Generally rainfall will remove the stress from the wheat and reduce the mite populations. Treatments are seldom warranted because the wheat normally is not severely damaged in the absence of drought stress.

Gary Hein, Extension Entomologist
Panhandle REC, Scottsbluff

Research update

Using Aim in spring grains

The herbicide Aim has been labeled for wheat for about two years and last fall was labeled for barley and oats. (It also is labeled for preplant burndown or postemergence broadleaf weed control in corn, soybean, and sorghum.)

Apply Aim herbicide alone or as a tank mixture with other herbicides to emerged and actively growing weeds. Aim alone can be applied to wheat, barley, and oats in all tillage systems from 30 days before planting up to the joint stage of growth. Tank mix partners may limit application timing. Do not apply when conditions favor drift or harvest for forage within seven days of application.

For best performance, make application to actively growing weeds up to 4 inches tall and rosettes less than 3 inches across. For larger weeds and dense weed pressure, use the higher recommended rate plus tank mix combinations. Coverage is essential for good control.

Use a nonionic surfactant at 0.25% v/v (2 pints per 100 gallons of spray solution) having at least 80% active ingredient. A high quality sprayable liquid nitrogen fertilizer at a rate of 2-4% v/v (2-4 gallons per 100 gallons spray solution) or ammonium sulfate (AMS) at a rate of 2-4 pounds per acre may be used in addition to the nonionic surfactant. For spring wheat and barley, adding nitrogen fertilizer, UAN or AMS is recommended.

To control weeds not listed on this label, Aim may be tank mixed with other herbicides registered for use in wheat, barley, and oats. Refer to the other product's label for restrictions on tank mixing and observe all label precautions, instructions, and rotational cropping restrictions.

Aim may be applied by ground or air. Applications should be made by ground equipment using a minimum spray volume of 10 gallons of spray per acre. Air applications should use a minimum spray volume of 3 gallons per acre. Up to half of the spray volume (by air or ground) may be liquid nitrogen fertilizer.

In a 1996 study in the Paxton area Aim plus 2,4-D and 2% v/v 28% UAN at 10 and 20 gpa of spray solution did not cause a crop response. When 28% UAN was used as the carrier at 10 and 20 gpa, crop response was 18% and 26%, respectively. Using 10 gpa 28% UAN in 20 gallons of spray solution reduced the crop response to 11%. Applying 20 gpa of 28-0-0 with no herbicide resulted in 25% crop response. These ratings were made seven days after treatment. Sixteen days after treatment there was even less injury. With a mixture of 50% water and 50% 28% UAN treatment, crop response decreased to 10%. The Aim rate was 0.92 ounce.

A 1997 study in the Ogallala area with Aim at 0.92 ounce and dry 2,4-D at 0.25 active plus 1 qt 28% UAN at 5, 7.5 and 10 gpa of spray solution did not result in any crop response. At 10 gpa 1/4% N was added and no crop response was detected. Weed control for these treatments averaged from 80% to 100% on kochia and Russian thistle, 100% on tumble mustard and 98% on small seeded false flax weed.

Weeds (up to 4 inches) controlled with 0.33 to 0.66 ounce of Aim per acre include: lambsquarters (up to 2 inches), pennycress, field mustard, tansy, pigweed, redroot, hairy nightshade, velvetleaf, and black nightshade.

Suppressed weeds (up to 4 inches) include: field bindweed; *lettuce, prickly; Canada thistle; henbit, *mustards; Russian thistle*; *kochia; *shepherdspurse; and wild buckwheat. (*See tank mix combinations with 2,4-D and MCPA for

(Continued on page 17)

Estimating winter wheat grain yields

The winter wheat growing regions of Nebraska are characterized by large fluctuations in temperature, precipitation, and wind speed. Winter wheat often suffers as a result of these climatic fluctuations. Wheat growers are frequently confronted with the need to estimate wheat yields in the spring in order to make decisions about potential recropping. The tables (*below*) rely on a number of assumptions that may not be accurate for every season or situation.

Table 1 is easy to use and can provide a yield estimate in the fall or early spring prior to extensive tillering or stem elongation. The assumptions include:

1) that wheat plants, on the average, develop about five heads,

2) that each head, on the average, develops about 22 kernels, and

3) that there is an average of 16,000 kernels per pound. Late-planted wheat, and wheat seeds that do not germinate until later because of dry conditions, will tiller less and have fewer heads.

To use the table, count the number of plants per foot of row. It is best to use at least 5-feet of row in at least five sites within the field and calculate the average number of plants per foot of row. If the stands are uneven, for example, the stand is better or worse in the wheel tracks, make sure your percentage of samples in these areas are the same as the portion of the area they make up in the field. Locate the column in the table that corresponds to your average number of plants per foot of row and then move down that column until it intersects with the row corresponding to your row spacing. This is your estimated yield.

Table 2 was developed using data collected from 1994 to 1998 as part of the Nebraska Wheat Quality Survey. These surveys are conducted annually near May 1, prior to head emergence in most of the state. Factors such as heavy weed/disease/insect infestations or an inadequate soil moisture profile observed at the time of the tour may suggest fewer final heads and a lower yield potential than indicated in the table. In addition, the table becomes unreliable in situations of extremely low or extremely high tiller counts, or in years when crop development as of May 1 is well ahead or behind normal. For later season estimates, yield predictions can be made by substituting the actual number of heads/ft for tillers/ft.

To use the table, count the number of tillers per foot of row. As stated for Table 1, it is best to use at least 5 feet of row in at least five sites within the field and calculate the average number of plants per row foot. Be sure your sample sites are representative of the field. Locate the column in the table that corresponds to your average number of tillers per

(Continued on page 17)

Table 1. Estimated wheat yield potential.

	Number of plants/foot of row											
Row spacing inches	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
	bushels/acre											
6	10	20	30	40	50	60	–	–	–	–	–	–
7.5	8	16	24	32	40	48	56	64	–	–	–	–
9	7	13	20	27	33	40	47	54	60	–	–	–
10	6	12	18	24	30	36	42	48	54	60	–	–
12	5	10	15	20	25	30	35	40	45	50	55	60
14	4	9	13	17	22	26	30	34	39	43	47	52

Table 2. Estimating winter wheat yield after stem elongation for the Nebraska Panhandle – see example above for other Nebraska locations.

	Number of tillers/foot of row												
Row spacing inches	*10*	*15*	*20*	*25*	*30*	*35*	*40*	*45*	*50*	*55*	*60*	*65*	*70*
	bushels/acre												
6	22	34	49	56	67	79	90	101	112	–	–	–	–
7.5	18	27	36	45	54	63	72	81	90	99	108	–	–
9	15	22	30	37	45	52	60	67	75	82	90	97	105
10	13	20	27	34	40	47	54	61	67	74	81	88	94
12	11	17	22	28	34	39	45	51	56	62	67	73	79
14	10	14	19	24	29	34	38	43	48	53	58	63	67

Public wheat breeding programs lead to advances

Six billion people will rely on the four major cereal crops for most of their food in the 21st century. As productive land disappears to other uses, improved cereal crop varieties developed by plant breeders offer the greatest hope of feeding the world, according toUniversity of Nebraska researcher Steve Baenziger.

Baenziger, NU wheat breeder, was one of a panel of four prominent plant geneticists and plant breeders speaking on "Feeding 6 Billion People" at the annual meeting of the American Association for the Advancement of Science (AAAS).

"Wheat is the last major public sector crop where the breeding and development of new varieties is done by public sector scientists, where the public owns the germplasm and where public varieties are still important," Baenziger said.

Of the 900 cereal grain breeders in the United States, 141 work in wheat and 59 percent of them work in the public sector — at public universities and federal agencies. In contrast, 600 plant breeders work in corn, 93 percent for commercial companies, he said.

Commercial research makes a large contribution, Baenziger said, but public research can accomplish great things, as shown by the 40-year record of top wheat varieties produced by the University of Nebraska/U.S.Department of Agriculture-Agricultural Research Service wheat breeding team based at Lincoln.

Winter wheat varieties developed by this public-sector team are planted on about three-fourths of Nebraska's wheat acres and have boosted the state's annual yields by 19 percent since the 1960s. Today, Nebraska wheat growers can feed nearly 5 million more Americans each year than they were able to on the same acreage in the 1960s. Based on yield alone, University of Nebraska/USDA varieties are worth an additional $31 million to $37 million annually to Nebraska producers.

"This outstanding record gives an idea of what a moderate-sized public research program can do," Baenziger said. The future of cereal breeding depends heavily on genomics and allied technologies, which will offer powerful new tools and resources to plant breeders, he said.

"If we are serious about making the best use of genomics information, the public funding to develop applications must go to public research because this is where we ave a successful record of technology transfer and of providing the necessary products to increase the productivity of the American farmer," Baenziger said.

Vicki Miller
IANR News and Publishing

Yields *(Continued from page 16)*

foot of row and then move down that column until it intersects with the row corresponding to your row spacing. This is your estimated yield. The table was developed using data collected in the Nebraska Panhandle. For other Nebraska locations, multiply the table result by the following factor:

Southwest Nebraska – 0.9
Central and South Central Nebraska – 0.85
Southeast Nebraska – 0.75

For example, if your winter wheat field is in southwest Nebraska and you have an average of 30 tillers per foot of row, and your row spacing is 10 inches, multiply the table result of 40 bushels/acre by 0.9 to get a yield estimate of 36 bushels/acre.

No matter which of the above tables you use, remember that these are only estimates. These estimates assume the plants are healthy, moisture is adequate, and weed control and fertility meet crop requirements. If you are considering recropping, don't forget about herbicide carryover from wheat herbicides such as Ally, Amber, Maverick, Tordon or other herbicides that may affect recropping options.

Drew Lyon
Extension Dryland Cropping Systems Specialist, Panhandle REC

Aim *(Continued from page 15)*

commercial levels of control.

Do not apply more than 1.24 ounces (0.031 pound active ingredient) per acre per season including fallow/preplant burndown and labeled crop applications.

Tank mixes with other herbicides

Aim may be tank mixed with other herbicides to control weeds not listed on this label. Read and follow all manufacturer's label recommendations for the companion herbicide except for specific label recommendations. When tank mixing Aim with other products, be sure the Aim is mixed in the spray tank water first.

Tank mixtures of Aim with EC or ester formulations of other crop protection products may increase leaf speckling. Do not use Aim with crop oil concentrate, methylated seed oil or silicone base adjuvants.

For Aim plus grass herbicide tank mixes, follow adjuvant recommendations for the grass herbicide partner.

The NU Cooperative Extension *2001 Guide for Weed Management in Nebraska* lists the price for Aim at $8/ounce.

Bob Klein, Extension
West Central REC

Forecast mixed for spring, summer

While producers can't control the weather, they can minimize its risks by using forecasts, research models, and historical records to consider the odds of specific weather occurences developing this year.

A variety of weather and climate information resources are available for the coming growing season. Such information can be used to adjust and improve details of many farm management decisions as well as to help with future decisions.

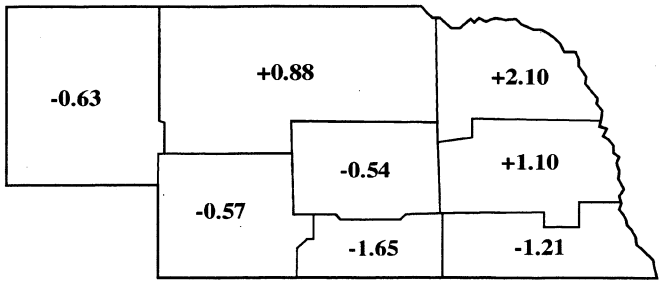
There are several sources of predictions of rainfall and temperature anomalies for the spring and summer of 2001. These "anomalies" describe the difference between anticipated rainfall and temperature and climatological average rainfall and temperature for spring or summer. The climatological average is the average over all the springs or summers in the last 30 years. A positive anomaly, for example, would indicate we would receive more rainfall than average. These predictions have various levels of confidence or reliability. A 60% confidence level of a prediction indicates that the predictions would be correct 60 out of 100 predictions. Although the predictions are far from absolutely reliable, those of confidence level at and above 60% provide more useful information than a blind choice in making weather related decisions. Their use will lead to a success potential higher than 50%.

UNL's seasonal precipitation and temperature predictions for the eight sub-climate regions in Nebraska are shown in Fig. 1. The first two maps show predicted rainfall and temperature anomalies for this spring (March, April, and May) and the second pair for this summer (June, July, and August). For spring, we are anticipating above normal precipitation by over 2 inches in the north and particularly northeast sections of the state, and below average precipitation in the rest of the state. Warmer-than-normal temperatures are expected in the sections with below normal precipitation, with a minor exception in the south. This summer, most of the state is expected to have below normal rainfall varying from less than 1 inch to over 2 inches. The rainfall and temperature anomalies together depict a warmer and drier condition for most of the sub-climate regions except for southern Nebraska.. The confidence level of these predictions is around 65%.

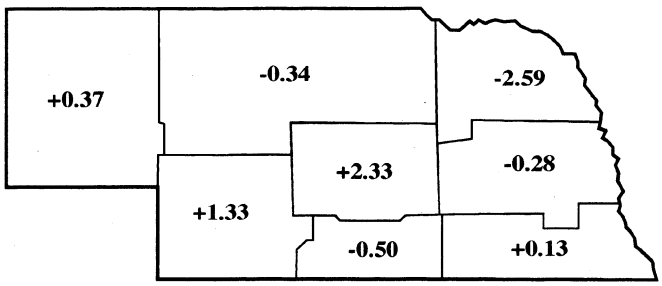
The Climate Prediction Center of the US National Weather Service makes short-term (10-30 day) predictions of precipitation and temperature for Nebraska and other states at its web site: *http://www.cpc.noaa.gov/products/forecasts/*. There you can select from a variety of forecast options, including, watches and warnings; ultraviolet radiation; 0-48 hours; 3-7 days; 6-10 days; 8-14 days; monthly and seasonal. These "generic" predictions are updated regularly and their confidence levels are printed with them. You may need to "digest" the information to produce predictions for particular areas of interest.

(Continued on page 19)

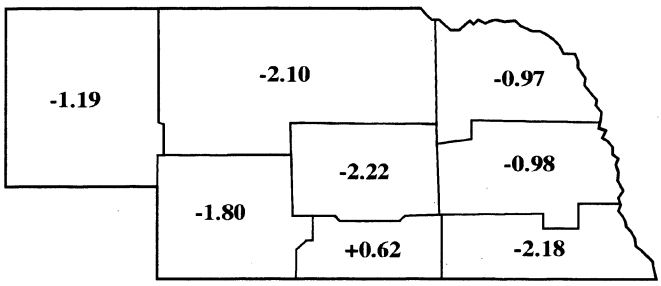
Figure 1. Spring and summer precipitation and temperature predictions for eight Nebraska regions.



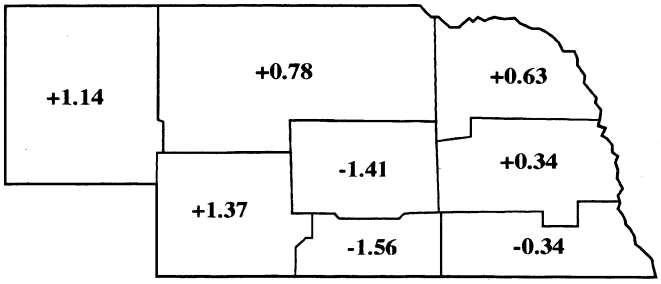
2001 spring rainfall prediction for Nebraska



2001 spring temperatue prediction for Nebraska



2001 summer rainfall prediction for Nebraska



2001 summer temperature prediction for Nebraska

Spring irrigation -- when is it needed in wheat?

During last fall's planting season, much of the winter wheat was drilled into dry soil. However, as the fall progressed, precipitation increased and a much brighter picture developed for winter wheat. Although soil water conditions vary within the production region, those fall rains and winter snow replenished much of the soil profile. The result is that most winter wheat plants are in good condition as they prepare to come out of dormancy.

Unless winter wheat is threatened by dessication, irrigation is not recommended early in the spring before the plants break dormancy. Even after the plants break dormancy irrigation should not be needed unless extremely dry conditions develop. Irrigating too early in the growing season does not allow the wheat to effectively use the water that has been stored in the soil profile or develop a good root system. In addition, early irrigation can encourage rank growth and may result in lodging with no increase in yield. Because early water tends to favor the development of plant material, maturity can also be delayed with excessive water in the spring.

Most precipitation occurs in March, April and May so crop water needs normally can be met through precipitation up until the boot stage. Adequate water is needed during this period to assure that water is available as the plants begin to develop grain. This does not mean that irrigation should begin at the boot stage, rather that irrigation be used to assure that plant stress does not occur as the wheat approaches the mid-boot stage. Knowing when to irrigate will require an understanding of the total water used by the crop along with the water received either through rain or irrigation.

Many irrigation systems are not designed to meet the daily water needs of a crop. If this is the case, irrigation must begin prior to peak crop water demand. For winter wheat, peak water use occurs during the month of June. Refilling the soil profile before peak demand means the plants can draw on both stored soil water as well as use water supplied by irrigation to obtain daily water needs. Normally, starting to irrigate in the early to mid-boot stages and continuing through early grain fill will be sufficient to meet crop water demand.

Keep in mind, coarse textured soils require earlier and more frequent irrigations to prevent plant water stress. Watch for signs of stress and monitor the soil water level. If stress in inevitable, irrigate.

C. Dean Yonts
Extension Irrigation Specialist
Panhandle REC, Scottsbluff

Nutrient specialist joins agronomy

Charles Wortmann joined the Department of Agronomy and Horticulture in January as nutrient management specialist for southeast Nebraska with additional statewide extension responsibilities for manure and municipal biosolid use.

Wortmann grew up on a farm near Hartington and was graduated from the University of Nebraska with a BS in agronomy, 1972; MS in soil fertility, 1978; and a PhD in crop science, 1987. Between 1973 and 1984, he worked in Tanzania supporting agricultural extension efforts and from 1987 to 1999 he worked with CIAT at an International Agricultural Research Center based in Uganda to support dry bean production and soil fertility research.

"I am still considering various challenges and opportunities before setting priorities, but areas of interest include site specific amendment of acid soils, efficient use of phosphorus in manure and biosolids while minimizing negative environmental effects, and developing statewide capacity for developing and implementing comprehensive nutrient management plans for animal feeding operations."

Wortmann can be reached at his office at 154 Keim Hall, Lincoln, 68583-0915, phone: (402) 472-2909 or Email: cwortman@unlnotes.unl.edu

Forecast *(Continued from page 18)*

Shorter term forecasts are available from the MMM Division of the National Center for Atmospheric Research and are available at *http://rain.mmm.ucar.edu/mm5/*. This site allows you to select a time frame for the forecast, from 6 to 48 hours, and more importantly, to view predictions for a variety of weather parameters (rain, temperature, relative humidity, cloud cover, and wind) and soil moisture. The forecast indicates that there is adequate soil moisture across most of Nebraska for the next few days.

These predictions provide a full spectrum of weather, climate, and related environmental condition updates ranging from the very short term of a few hours to longer term seasonal information. Using the various resources available can help you better assess the odds for particular kinds of weather and minimize the risks to your operation from weather and climate anomalies.

For access to the Web, contact your local Cooperative Extension Office or your regional library. Contact our office (402-472-6642) for further help on evaluating data from these resources for your situation.

Q. Steven Hu
Agricultural Climatologist

Topdressing nitrogen in winter wheat

Most winter wheat grown in Nebraska requires some additional nitrogen fertilizer for profitable production. This is true for virtually all soils in Nebraska where wheat is commonly grown unless there is a large carryover of fertilizer nitrogen. Residual fertilizer nitrogen can be measured effectively with a residual soil nitrate test of the root zone. While the depth of the root zone is often six foot or more for wheat, most available nitrogen affecting yield is in the top two or three feet of soil. Samples should be taken to a depth of three feet to determine residual nitrate levels. (Samples may be taken less than three feet deep, but they will be slightly less accurate. See the March 2 *Crop Watch* for details.)

Topdressing nitrogen on wheat in spring allows the producer to evaluate yield potential based on stands and soil moisture. Topdressing provides a significant advantage to wheat producers because it can help them avoid investing in a crop with a low yield potential. Topdressing should be completed prior to April 15 or prior to jointing. With later nitrogen applications, yield response decreases and grain protein content generally increases.

The optimum nitrogen rate for winter wheat is calculated according to the following equation, where

N PRICE is the price of nitrogen fertilizer in dollars per pound;

WHEAT PRICE is the price of wheat in dollars per bushel, and

NO_3-N stands for the average ppm NO_3-N in the top three feet of soil.

Wheat N Rate (pounds/acre) =
((N PRICE / WHEAT PRICE) + 0.014558 x NO_3-N - 0.235) / -0.00138

All fertilizer nitrogen sources (ammonium nitrate (33-0-0); urea (45-0-0); urea-ammonium-nitrate UAN (28-0-0); and anhydrous ammonia (82-0-0) are generally effective for spring nitrogen fertilization. Ammonium nitrate is preferred for topdressing when incorporation is impossible because it is the least susceptible to loss from volatilization. If they are incorporated soon after application all nitrogen sources should be equally effective. Base your fertilizer selection on the most economical source of nitrogen that fits the restrictions of the particular wheat production system you use.

Table 1: Optimum amount of nitrogen to apply based on residual nitrate in the soil to a depth of three feet. (See *Guidelines for Soil Sampling*, G91-1000, for suggestions on taking soil samples.) Recommendations in pounds of nitrogen to apply per acre are shown for two nitrogen prices (15 cents and 25 cents per pound of nitrogen) and two wheat prices ($ 2.50 and $ 3.00 per bushel). If a soil sample is not taken, use the recommendations for 8 ppm of nitrate-N per acre which represents about an average or medium soil nitrate level.

		Wheat price ($/bushel)			
		$2.50		$3.00	
Residual Nitrate-N (3-feet soil sample)		Fertilizer price ($/pound of N)			
Avg. ppm	lb.N / acre	$0.15	$0.25	$0.15	$0.25
		Optimum nitrogen pounds per acre			
2	22	106	77	113	89
4	44	85	56	92	68
6	65	64	35	71	47
8	87	42	13	50	26
10	108	21	0	29	5
12	130	0	0	7	0

The producer should remember to subtract any nitrogen applied last fall from these recommendations.

Jurg M. Blumenthal
Soil Fertility / Nutrient Management Specialist
Panhandle REC, Scottsbluff

What's Shaping to target operation costs

Controlling production costs by "fine-tuning" operations is the subject of the March 21 internet edition of "What's Shaping the Markets." The NU Cooperative Extension program will be live on the internet from 3 to3:45 p.m. and can be viewed at the Extension web site Rural Routes (*ruralroutes.unl.edu*). The program is archived for viewing after 5 p.m. Wednesday.

"The high costs of fuel, fertilizer, the reduced supply and low germination of soybean seed along with a predicted cool, wet April will require some last minute fining tuning of putting the crop in," said Jim Kendrick, NU marketing specialist emeritus and program host.

Participating in the discussion will be Larry Bitney, NU farm management specialist; Achim Dobermann, NU soil fertility / nutrient management specialist; Paul Jasa, NU agricultural engineer; and Bob Klein, NU cropping systems specialist.

Also on the program will be Dave Fiala, president of Futures One, and Al Dutcher, NU state climatologist.